1. Use a linear approximation to estimate \( \tan 44^\circ \)

2. The radius of a circular disk is given as 24 cm with a maximum error in measurement of 0.2 cm.
   
   (a) Use differentials to estimate the maximum error in the calculated area of the disk.
   
   (b) What is the relative error? What is the percentage error?
3. Show that $\tanh(\ln x) = \frac{x^2 - 1}{x^2 + 1}$

4. Show that $\frac{d}{dx} \sqrt{\frac{1 + \tanh x}{1 - \tanh x}} = \frac{e^{x/2}}{2}$
5. Find the absolute maximum and absolute minimum values of \( f(t) = t\sqrt{4-t^2} \) on \([-1,2]\).

6. Suppose that \( 3 \leq f'(x) \leq 5 \) for all values of \( x \). Find two constants \( a \) and \( b \), such that \( a \leq f(8) - f(2) \leq 30 \).